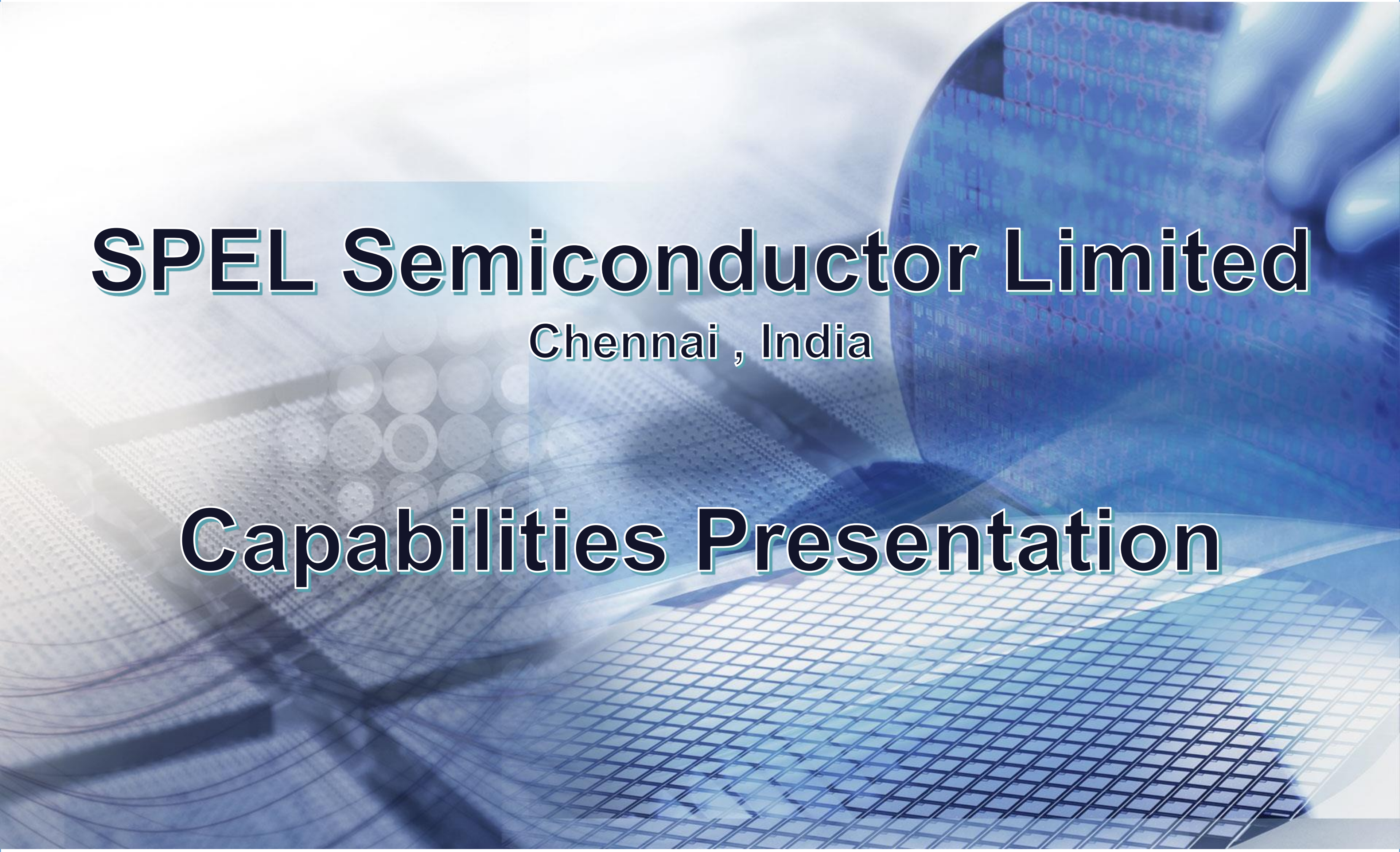
Natronix Semiconductor

SPEL Semiconductor



SPEL Semiconductor Limited

Chennai , India

Capabilities Presentation

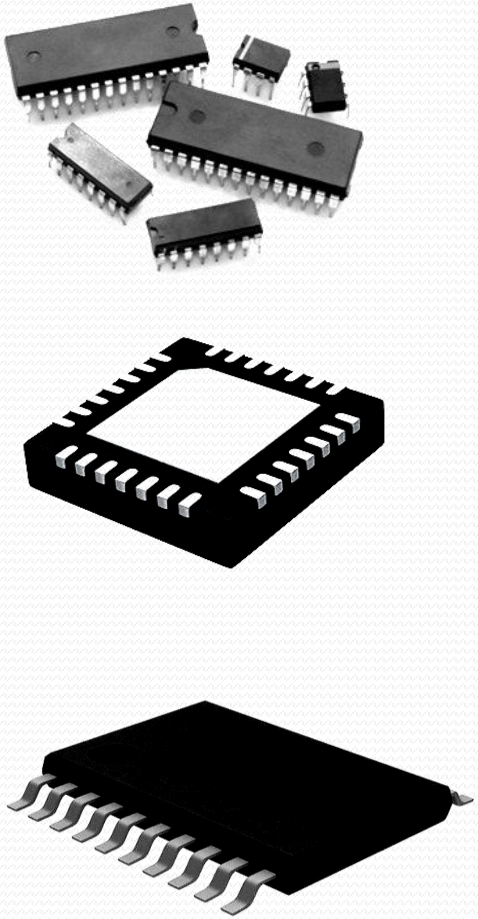
Sep 26, 2025

Content

About Us

- The Valingro Group is involved in creating companies concentrating on global competitiveness, leveraging global opportunities and acquiring global capabilities
- Natronix Semiconductor Technology Private Limited headquartered in Singapore is a member of the Valingro Group
- Natronix Semiconductor Technology Private Limited has its OSAT presence in India through its subsidiary SPEL Semiconductor Limited
- SPEL is the first IC Assembly & Test facility in India which commenced commercial production in 1989
- SPEL has customers covering all major application segments
- Natronix-Sg has targeted further acquisitions within OSAT and D&V segments.

OSAT Services



Full Turnkey Solutions

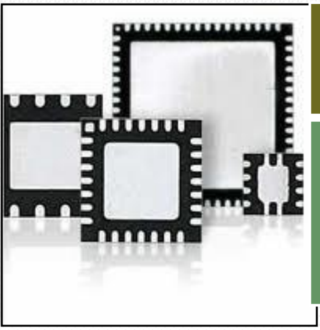
- Assembly
- Testing & Packing

Value Added Services

1. Design :
   - Package design
   - Lead frame design
2. Assembly :
   - 100% Tin plating, 85:15 Tin:Lead and Ni-Pd-Au PPF
   - Sandwich Package
   - Wettable Flank in 9 TDFN, 32 QFN, 52 QFN Assembly
3. Others :
   - Drop shipments across the globe

Package Portfolio

QFN Capability

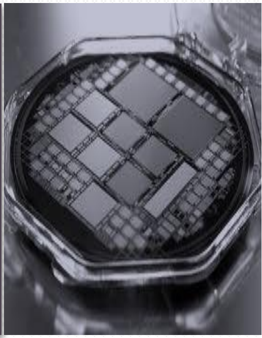


Process	Package Thickess	Body Size in mm	Lead-Pitch	Lead-Count
Saw Singulated QFN / DFN	0.50 mm 0.75 mm 0.90 mm	0.6 x 1 to 12 x 12	0.40 mm 0.50 mm 0.65 mm	2 ~ 80 pins

Leaded

PACKAGE	LEAD COUNT	JEDEC STANDARD
150 MIL ; 300 MIL SOIC	7/8/14/16; 16/20	MS-012 ; MS-013
150 MIL QSOP ; VSOP	16/20/24/28; 40/48	MS-137 ; MS-154
173 MIL TSSOP	8/20/24/38	MO-153
150 MIL MILLIPAQ	80	MO-154
300 MIL PDIP	8/14/16	MS-001
225 MIL SIP	8	NA

Test Platforms

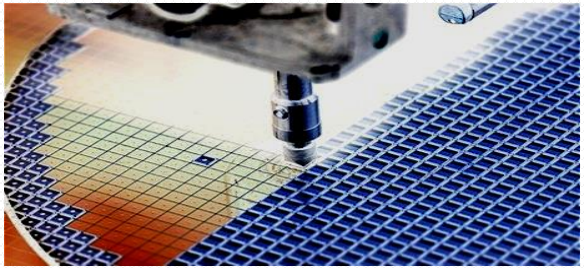


TEST PLATFORM	Credence ASL 1000	Eagle ETS 364 / 88	Verigy V50
DIGITAL	✓	✓	✓
MIXED SIGNAL	✓	✓	✓
ANALOG	✓	✓	

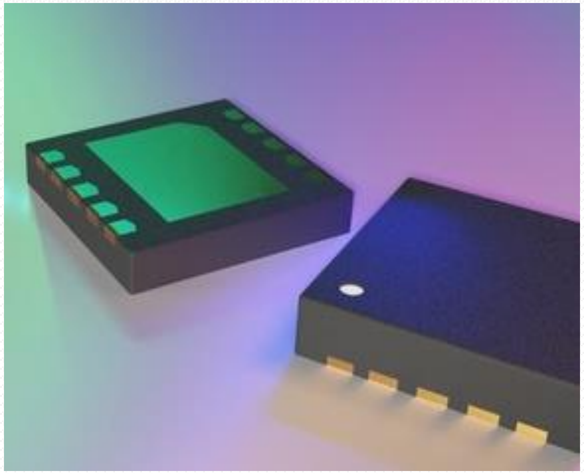
Bill of Material

Material	Leaded / QFN / DFN	Supplier
Lead frame	C7025, Olin 194, EFTECH & NiPdAu Pre-plated	QPL (HK), NKQ (China), Fullriver (China)
Die Attach Epoxy	CRM1076NS	Sumitomo (Singapore)
	Non Conductive 8006 Conductive 8008	Henkel (Korea)
Gold Wire	0.8 to 2.0 mil	Tanaka, Heraeus (Singapore)
Bare Copper wire / PdCu wire	0.8 to 2.0 mil	Tanaka (Singapore), Heraeus (Malaysia)
Mold Compound	G633 & G770Series	Sumitomo (Singapore)

Technical Capabilities



- Minimum die size : 10 Mils square
- Bond Pad Pitch : 40 microns
- Apart from Gold wire Copper wire bonding (Bare Cu & Pd Coated) – 0.8 mil to 2.0 mil
- Low loop bonding : 4 mils
- Wafer mapping at Die Attach
- Multi-die package assembly
- Multi-site Test capability



Capacity

Package Category	Capacity / Month (Mln Units)	Remarks
Leaded	1.7	Twenty Lead Equivalent
QFN / DFN	3.3	Three Sq.MM Equivalent

- 32% of the Total Capacity is available for Copper Bonding
- 100 % power backup

Test Capability

Logic

Clock Drivers

Power Products

PLLs & VCOs

IPDs

Clock Buffers

Industrial Analog

Reliability Equipment

Sl #	Reliability Equipment	Manufacturer
1	Burn-in	Blue-M, USA
2	Dry Heat (Class 100) Oven	Lab line, USA
3	HAST	Hirayama, Japan
4	Autoclave	Hirayama, Japan
5	Solder Pot	HMP, USA

PC-422R8

Site Area	**362.854 K Sq Ft**
Built Up Area	**92,191 Sq Ft**

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Package Roadmap

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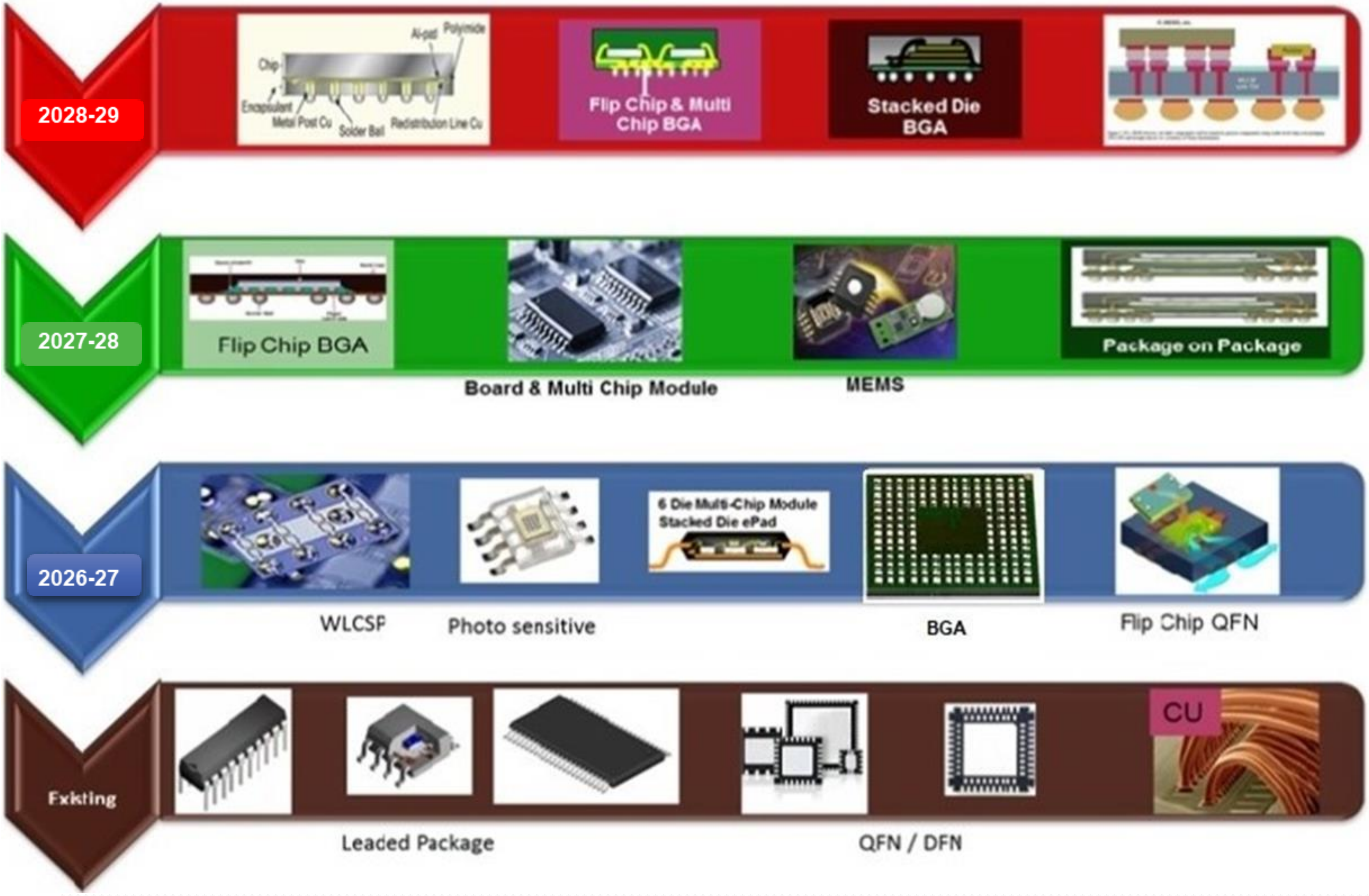

2028-29

- Flip Chip & Multi Chip BGA
- Stacked Die BGA

2027-28

- Flip Chip BGA
- Board & Multi Chip Module
- MEMS
- Package on Package

2026-27

- WLCSP
- Photo sensitive
- BGA
- Flip Chip QFN

Existing

- Leaded Package
- QFN / DFN

Defining The Future Through Partnerships

Cost Competitive

Packaging Cost

- Substantial Cost Savings
- Low Cost for new package development in QFN / DFN
- Attractive amortization proposals for new package tooling

Test Cost

- Low Development Charges – Onsite or Offshore
- Low Production Costs
- Attractive pricing for the consigned testers

Quality Policy

Consistently provide products and services that will exceed the quality expectations of our Customers.

Implement process improvement programs which will enable each Employee to do their job

Right the first time.

Work towards continual quality improvement through training and teamwork

- Quality methodologies are guided by International standards
- Quality endeavour is to deliver best in high-class, defect-free solutions and services
- Standardizing development activities to align with Customers requirements
- Process robustness are built through ISO 9001:2015 standards accreditation
- Zero Customer Return
- Continuous Improvements through Industry Benchmarking
- Effectively Implement PPAP, APQP, MSA, SPC & FMEA to ensure Outgoing Product Quality

Natronix Semiconductor

Customers

SPEL Semiconductor

THAT Corporation
Making Good Sound Better®

RENESAS

HMT microelectronic AG

Device Engineering Incorporated

TopLine®

SYRMA SGS

NVE NVE CORPORATION

TE connectivity

RFMICRON

IC LOGIC MICROCHIPS

KOA

MICROCHIP

LSI/CSI a Semiconductor Company

KOA KOA SPEER ELECTRONICS, INC.

MICRODUL Customized Swiss Microelectronics

Advanced Linear Devices, Inc.

HOLT INC. INTEGRATED CIRCUITS

ON Semiconductor® ON

JVD

SERMA GROUP

kinetic technologies

SimpleChips Technology
Analog & Mixed-Signal ICs

GStek

SENSONIX

MSI TEC

Microelectronics Components Corporation

data delay devices, inc.

iSine

AEMICS smart products

SILTERRA

TIMKEN

VISHAY

Littelfuse®

Key Design

TT Electronics

E.K.S.S. Microelectronics Ltd
Operating your Silicon to Success

bruco INTEGRATED CIRCUITS

meticom

NOVA

Defining The Future Through Partnerships

End-Customer Audits

End Customers

SAMSUNG

IBM®

SONY make.believe

Baumer

HITACHI Inspire the Next

AVAGO TECHNOLOGIES

Customers

KOA® KOA SPEER ELECTRONICS, INC.

ON Semiconductor® ON

HOLT INC. INTEGRATED CIRCUITS

kinetic technologies

rakon

NVE NVE CORPORATION

Manpower

- Technically qualified operators & technicians
- Skilled engineers & experienced Management
- With total manpower of 105+ Employees
- Low attrition rate (< 6%). Developed second-in-line in all functions starting from Supervisor level
- Strong engineering database ensures that any attrition will not affect any process
- Over 40% of the employees have over 15 years of service with SPEL
- Low direct labor cost & management provides various Employee welfare schemes as a motivational activity through Employee Welfare Committee
- Training cell providing comprehensive training (including soft skill & Customer focus) to all level at regular interval & conducts test to ensure the capability
- Talent pool available from Local universities with electronics/semiconductor background

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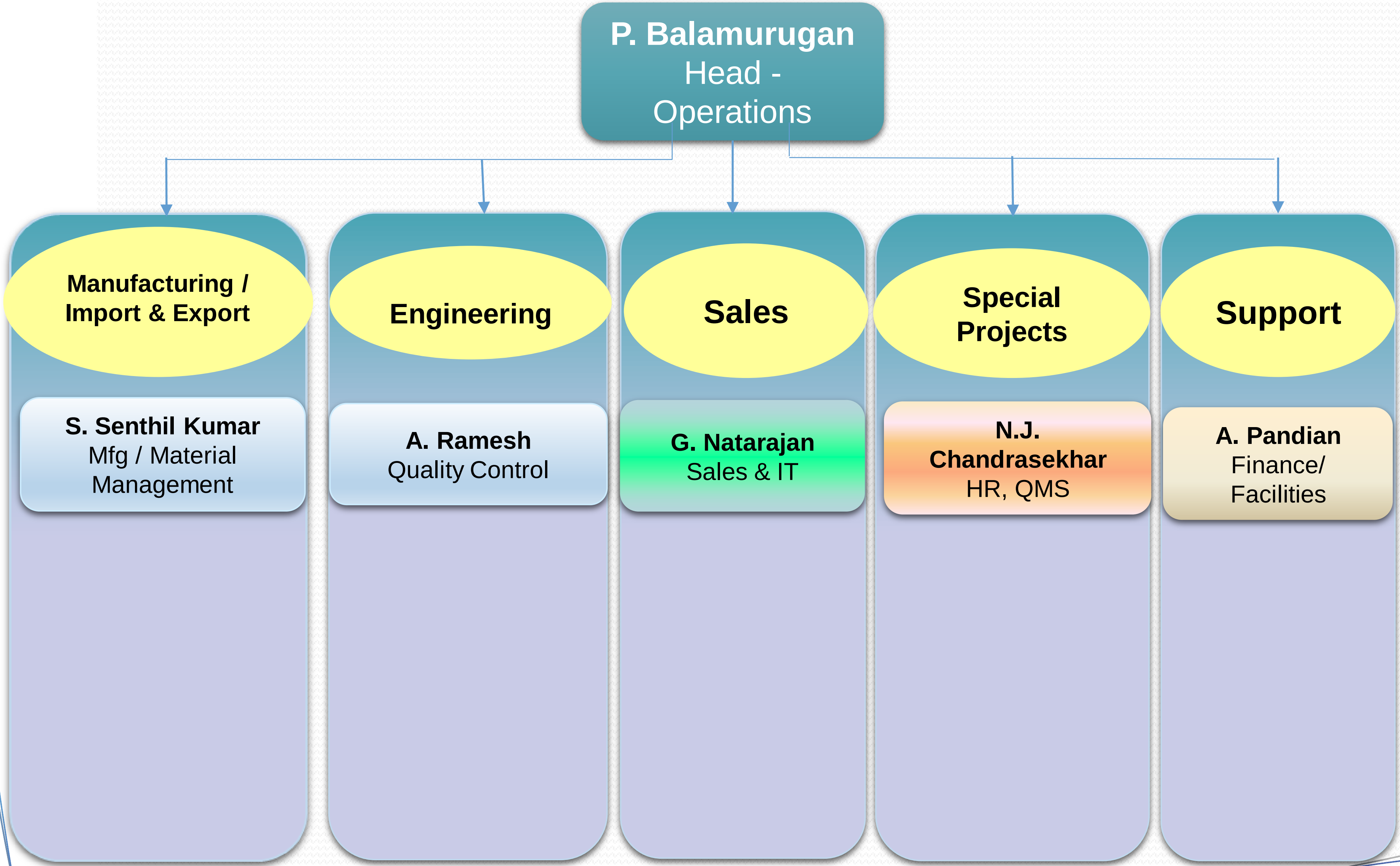
Org Chart

SPEL Semiconductor



P. Balamurugan
Head - Operations

- **Manufacturing / Import & Export**
  - **S. Senthil Kumar** Mfg / Material Management
- **Engineering**
  - **A. Ramesh** Quality Control
- **Sales**
  - **G. Natarajan** Sales & IT
- **Special Projects**
  - **N.J. Chandrasekhar** HR, QMS
- **Support**
  - **A. Pandian** Finance/ Facilities

Defining The Future Through Partnerships

Logistics

- One Stop Turnkey Destination :
- ***Probe → B/G → Assembly → Test → T&R → Drop shipment***
- Turnaround time

- Assembly 7 days with Linear Loading
- Testing : 5 days
- Fast Track Assembly in 3 days with Premium Charge

- Factory Schedule : 24 x 7
- Drop Ship to End-Customers
- Daily Direct Flights to US, Europe & Asia Pacific :
- 2days Transit (Inbound / Outbound)
- STAR eWIP - an online Semiconductor Tracking And Resourcing Software for regular Customer WIP update

Connectivity

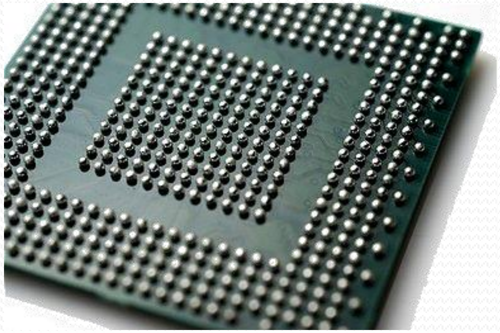
Quick Clearance

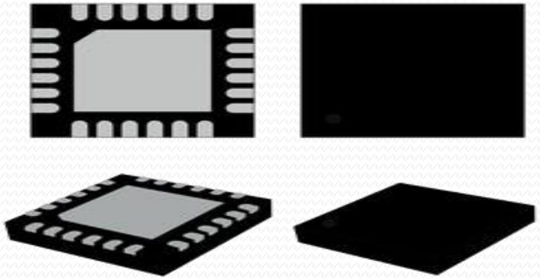
- SPEL is awarded AEO (Authorized Economic Operator) Certificate by Central Board of Excise & Customs

- Green Channel Status for Imports & Exports
- Zero Customs Duty & No Open Inspection
- Our Own Custom clearance office in Airport premises
- Clearance within 6 Working hrs.
- Easy Equipment Consignment In & Out of factory
- Certified as Star Export house by Ministry of Commerce & Industry, Govt. of India
- Accredited Client Programme (ACP) status from Board of Excise & Customs enables faster clearance

Recent Developments

- Adding few more QFN packages with minimum sizes
- Qualified for Silver bonding
- Packaged die to die bonding & PCB bonding for domestic Customers
- Pursuing to acquire assembly houses for BGA & WLCSP packages
- Added Wettable Flank packages for better solderability
- Sandwich package





Our USP

- Excellent Value proposition
- Low cost Turnkey services
- Provides one stop solution for all QFN & Leaded packages
- Excellent Customer service
- Dedicated Customer account engineers. Interacting on daily basis with Customers in real time basis. No need of any resident engineer for any of the Customer
- Package Portfolio covering major application segments
- Has test platforms for all products
- New package development and prototype assembly
- Has talented team to provide solutions
- Test engineering support
- Developing test programs for all needs
- On-Time delivery
- Potential market growth in India
- Govt's policy initiations, Incentive schemes, Encouraging indigenous manufacturing, Consumer consumptions growth etc.